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PART LII DATA PROCESSING

Section 11 Operating Techniques and Facilities

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PART LII DATA PROCESSING

Section 11 Operating Techniques and Facilities

0. FOREWORD

0.1 This Indian Standard (Part LII/Sec 11) was adopted by the Indian Standards Institution on 15 September 1980, after the draft finalized by the Basic Standards on Electronics and Telecommunication Sectional Committee (LTDC 1) in consultation with Computers, Business Machines and Calculators Sectional Committee (LTDC 24), had been approved by the Electronics and Telecommunication Division Council.

0.2 Electronic data processing is utilized for numerous exchanges and analysis of information of both intellectual and material nature. Application of electronic data processing becomes difficult, either because of the great variety of terms used in various fields to express the same concept, or because of the absence of or the imprecision of useful concepts. To overcome these barriers, this standard has been formulated.

0.3 This standard is one of the series of 20 Indian Standards on data processing vocabulary, constituting Part LII of the electrotechnical vocabulary which deals with the main areas of data processing classified under the following heads:

Section 1	Fundamental terms
Section 2	Arithmetic and logic operations
Section 3	Equipment technology
Section 4	Organization of data
Section 5	Representation of data
Section 6	Preparation and handling of data
Section 7	Digital computer programming
Section 8	Control, input-output and arithmetic equipment
Section 9	Data media, storage and related equipment

Section 10	Data communications
Section 11	Operating techniques and facilities
Section 12	Information theory
Section 13	Analog and hybrid computing
Section 14	Computer graphics and computer micrographics
Section 15	Programming languages
Section 16	Data bases
Section 17	Data structures
Section 18	Information system characteristics and development
Section 19	Reliability, maintenance and availability
Section 20	Control and integrity

0.4 Prime importance has been given to simplicity and clarity of the definitions so that they may be understood by all. It may, therefore, be felt that some definitions do not cover all the cases and exceptions.

0.5 Assistance has been derived in formulating this standard from International Standard ISO 2382 'Data Processing — Vocabulary — Section 10 Operating techniques and facilities' issued by the International Organization for Standardization.

1. SCOPE

1.1 This standard (Part LII/Section 11) covers the terms related to operating techniques and facilities as used in data processing.

2. BASIC TERMS

2.1 Functional Unit — An entity of hardware or software, or both, capable of accomplishing a specified purpose.

2.2 Processor — In a computer, a functional unit that interprets and executes instructions.

2.3 Process (In a Data Processing System) — A course of events occurring according to an intended purpose or effect.

2.4 To Process (Data) — To perform operations on data in a process.

2.5 Execution (of an Instruction)

a) The process of carrying out an instruction by a computer

b) The process of carrying out the instructions of a computer program by a computer.

2.6 To Execute — To perform the execution of an instruction or of a computer program.

2.7 Resource Allocation — The assignment of the facilities of a data processing system for the accomplishment of jobs.

Example : The assignment of main storage, input-output units. files.

2.8 Synchronous — Pertaining to two or more processes that depend upon the occurrence of specific events such as common timing signals.

2.9 Interrupt/Interruption — A suspension of a process, such as the execution of a computer program, caused by an event external to that process. and performed in such a way that the process can be resumed.

2.10 To Interleave — To arrange parts of one sequence of things or events so that they alternate with parts of one or more other sequences of the same nature and so that each sequence retains its identity.

2.11 To Bind (of an Address) — To associate an absolute address, virtual address or device identifier with a symbolic address or label in a computer program.

2.12 Response Time — The elapsed time between the end of an inquiry or demand on a data processing system and the beginning of a response.

Example : The length of time between an indication of the end of an inquiry and the display of the first character of the response at a user terminal.

2.13 Turnaround Time/Turnround Time — The elapsed time between submission of a job and the return of the complete output.

2.14 Throughput — A measure of the amount of work performed by a computer system over a given period of time.

Example : Number of jobs per day.

NOTE — A commonly used measure of throughput is the number of jobs per day or the number of transactions per hour.

3. OPERATING FACILITIES

3.1 Task — A basic unit of work to be accomplished by a computer.

Note — The task is usually specified to a control program in multiprogramming or multiprocessing environments.

3.2 To Dispatch — To allocate time on a processor to jobs or that that are ready for execution.

3.3 Dispatcher — That program in an operating system, or another functional unit, the purpose of which is to dispatch.

3.4 To Schedule — To select jobs or tasks that are to be dispatched.

Note — In some operating systems, other units of work such as input-output operations may also be scheduled.

3.5 Job — A unit of work that is defined by a user and that can be accomplished by a computer.

Note — Loosely, the term 'job' is sometimes used to refer to a representation of a job. This representation may include a set of computer programs, files, and control statements to the operating system.

3.6 Run — A single performance of one or more jobs.

3.7 Job Stream/Input Stream/Run Stream — The sequence of representations of jobs submitted to an operating system.

3.8 Command Language — A source language consisting primarily of procedural operators that indicate the functions to be performed by an operating system.

3.9 Object Module — A program unit that is the output of an assembler or a compiler and that is suitable for input to a linkage editor.

3.10 Load Module — A program unit that is suitable for loading into main storage for execution; it is usually the output of a linkage editor.

3.11 Linkage Editor — A computer program used to create one load module from one or more independently translated object modules or load modules by resolving cross-references among the object modules.

3.12 Core-Image — The form in which a computer program and related data exist at the time they reside in the main storage.

3.13 Control Block/Control Area — A storage area used by a computer program to hold control information.

3.14 Control Program — A computer program designed to schedule and to supervise the execution of programs in a computer system.

3.15 Resident (Adjective) – Pertaining to computer programs that remain on a particular storage device.

3.16 Nucleus/Resident Control Program – That part of a control program that is resident in the main storage.

3.17 System Generation/Sysgen — The process of selecting optional parts of an operating system and of creating a particular operating system tailored to the requirements of data processing.

4. OPERATING MODES

4.1 Batch Processing — The processing of data or the accomplishment of jobs accumulated in advance in such a manner that each accumulation thus formed is processed or accomplished in the same run.

4.2 Remote Batch Processing – Batch processing in which input-output units have access to a computer through a data link.

4.3 Time Sharing — A mode of operation of a data processing system that provides for the interleaving in time of two or more processes in one processor.

4.4 Conversational Mode/Interactive Mode — A mode of operation of a data processing system in which a sequence of alternating entries and responses between a user and the system takes place in a manner similar to a dialogue between two persons.

4.5 Real Time — Pertaining to the processing of data by a computer in connection with another process outside the computer according to time requirements imposed by the outside process.

Note — The term 'real time' is also used to describe systems operating conversational mode and process that can be influenced by human intervention while they are in progress.

4.6 Online/On-Line — With respect to a computer, pertaining to the operation of a functional unit that is under the continual control of that computer.

Note — The term 'online' is also used to describe a user's access to a computer via a terminal.

4.7 Offline/Off-Line —With respect to a computer, pertaining to the operation of a related functional unit without the continual control of that computer.

4.8 Single Step Operation/Step-by-Step Operation — A mode of operation of a computer in which a single computer instruction or part of a computer instruction is executed in response to an external signal.

5. OPERATING TECHNIQUES

5.1 Spooling — The use of auxiliary storage as a buffer storage to reduce processing delays when transferring data between the peripheral equipment and the processors of a computer.

NOTE — The term is derived from the expression 'Simultaneous Peripheral Operation on Line.'

Example : Card image created on a dish are processed rather than actual cards from the slower peripherals.

5.2 Remote Batch Entry — Submission of batches of jobs through an input unit that has access to a computer through a data link.

5.3 Remote Job Entry (RJE) — Submission of a job through an input unit that has access to a computer through a data link.

5.4 Time Slicing — A mode of operation in which two or more processes are assigned quanta of time on the same processors.

5.5 Multiprogramming — A mode of operation that provides for the interleaved execution of two or more computer programs by a single processor.

5.6 Multitasking/Multi-Tasking — A multiple operation that provides for concurrent performance, or interleaved execution, of two or more tasks.

5.7 Multiprocessing — A mode of operation that provides for parallel processing by two or more processors of a multiprocessor.

5.8 To Emulate — To imitate one system with another, primarily by hardware, so that the limitating system accepts the same data, executes the same computer programs, and achieves the same results as the imitated system.

6. STORAGE MANAGEMENT (GENERAL)

6.1 Blocking Factor — The number of logical records in each block.

6.2 Catalog/Catalogue — A directory for locating files and libraries.

NOTE — A catalog may contain other information, such as the type of devices on which the files are stored, passwords, blocking factor, etc.

6.3 To Catalog/To Catalogue — To enter information about a file or a library into a catalog.

6.4 Simple Buffering — A technique for assigning buffer storage for the duration of the execution of a computer program.

6.5 Dynamic Buffering — A dynamic allocation of buffer storage.

6.6 Dynamic Allocation — An allocation technique in which the resources assigned for the execution of computer programs are determined by criteria applied at the moment of need.

6.7 Dynamic Relocation — A process that assigns new absolute addresses to a computer program during execution, so that the program may be executed from a different area of the main storage.

6.8 To Roll Out — To transfer logical entities, such as files or computer programs of various sizes, from main storage to auxiliary storage for the purpose of freeing the main storage for another use.

6.9 To Roll In — To restore to the main storage the logical entities that were previously rolled out.

6.10 Swapping — A process that interchanges the contents of an area of main storage with the contents of an area in the auxiliary storage.

6.11 Protection/Lock Out — An arrangement for restricting access to or use of all, or part, of a data processing system.

6.12 Virtual Storage — The notional storage space that may be regarded as addressable main storage by a computer system in which virtual addresses are mapped into real addresses.

NOTE — The size of the virtual storage is limited by the addressing scheme of the computer system and by the amount of the auxiliary storage available, and not by the actual number of the main storage locations.

6.13 Virtual Address — The address of a notional storage location in the virtual storage.

6.14 Real Storage (In a Virtual Storage System) — The main storage in the virtual storage system.

NOTE — Physically, the real storage and the main storage are identical. Conceptually, however, the real storage represents only part of the range of addresses available to the user of a virtual storage system. Traditionally, the total range of address available to the user was provided by the main storage.

6.15 Real Address — The address of an actual storage location in the real storage.

6.16 Address Translator (In a Virtual Storage System) — A functional unit that transforms virtual addresses to real addresses.

6.17 Page (In a Virtual Storage System) — A fixed length block that has a virtual address and that can be transferred as a unit between the real storage and the auxiliary storage.

6.18 Page Frame — An area of the real storage that can store a page.

6.19 Paging — The transfer of pages between the real storage and the auxiliary storage.

6.20 Paging Technique — A real storage allocation technique by which the real storage is divided into page frames.

6.21 Demand Paging — The transfer of a page from the auxiliary storage to the real storage at the moment of need.

6.22 Anticipatory Paging — The transfer of a page from the auxiliary storage to the real storage prior to the moment of need.

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NOTE — This index has been prepared in accordance with IS : 1275-1958*. Index numbers are clause numbers.

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